



## DESK LAMP WITH FUNCTION OF GENERATING NEGATIVE IONS

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

5 The present invention relates to a desk lamp, particularly to a desk lamp with a function of generating negative ions.

#### 2. Description of the Prior Art

Conventionally, a desk lamp only has a lighting function. It should be improving the condition of air surrounding the desk for increasing the reading efficiency. A conventional portable negative ion generator has been included from  
10 TW Patent Publication No. 337710. A size of the portable negative ion generator should be as little as possible to be carried easily, but, if the portable negative generator is too small, it could be easily lost. Meanwhile, if the portable negative ion generator is located too far from a reader's head, the negative ions would be diluted and its help would be decreased.

15 An electrical light bulb with a function of generation negative ions and economizing energy is disclosed in TW Patent Publication No. 423704. The electrical light bulb comprises a contact base connected with a bulb body. A negative ion generator is installed in the contact base. Because the life of the light bulb is short, the expensive negative ion generator would be abandoned at the end  
20 of the life of the light bulb. Also, specifications of the light bulb and conventional bulb are not interchangeable.

### SUMMARY OF THE INVENTION

A primary object of the present invention is to provide a desk lamp with a function of generating negative ions. An air outlet plane of a negative ion generator  
25 is installed and directed toward internal wall of a lamp body to improve the atmosphere around the desk lamp for increasing reading efficient and not easy to lose.

A second object of the present invention is to provide a desk lamp with function of generating negative ions. An air outlet plane of a negative ion generator is installed and directed toward internal wall of a lamp body, and a fan is set on an air inlet plane of the negative ion generator, so that negative ions from the negative ion generator are exhausted outside the lamp body.

According to the invention, the desk lamp with a function of generating negative ions mainly comprises a lamp body and a negative ion generator. The lamp body includes a lamp base, a lamp arm and a lampshade. The negative ion generator has an air outlet plane toward an internal wall of the lamp body and is installed at a predetermined position inside the lamp base, the lamp arm of the lampshade, so that negative ions made by the negative ion generator are exhausted outside the lamp body. Preferably, an air inlet plane of the negative ion generator is installed with a fan for exhausting the negative ion outside the lamp body.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 is a schematic 3-D view of a desk lamp with function of generating negative ions of a first embodiment of the present invention;

Fig. 2 is a schematic side view of a desk lamp with function of generating negative ions of the first embodiment of the present invention;

Fig. 3 is a schematic 3-D view of a desk lamp with function of generating negative ions of a second embodiment of the present invention;

Fig. 4 is a schematic 3-D view of a desk lamp with function of generating negative ions of a third embodiment of the present invention;

Fig. 5 is an exploded perspective view of a desk lamp with function of generating negative ions of a fourth embodiment of the present invention;

Fig. 6 is a schematic side view of a desk lamp with function of generating negative ions of the fourth embodiment of the present invention;

Fig. 7 is a schematic side view of a desk lamp with function of generating negative ions of the fifth embodiment of the present invention;

Fig. 8 is a schematic side view of a desk lamp with function of generating negative ions of the sixth embodiment of the present invention.

**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

Referring to the drawings attached, the present invention includes the embodiments described below.

5           According to a first embodiment of the present invention shown in Fig. 1 and 2, a desk lamp with a function of generating negative ions includes a lamp body 110 and a negative ion generator 120. The lamp body 110 consists of a lamp base 111, a lamp arm 112 and a lampshade 113. The lamp base 111 is a base of the desk lamp for placing on the desk. A power switch 130 is set on the lamp base 111 for  
10           controlling a light source and the negative ion generator 120. The lamp arm 112 connects the lamp base 111 with the lampshade 113. The lampshade 113 has a connector for installing a lamp tube or a light bulb. The negative ion generator 120 is installed at an appropriate position inside the lamp body 110. The negative ion generator 120 includes driving circuits and negative ion discharging electrodes (not  
15           shown in the drawings). Theory of forming the negative ion generator 120 is commonly known and thus not described in detail herein. In this embodiment, the negative ion generator 120 is installed on an internal wall of the lamp base 111. The negative ion generator 120 has an air outlet plane 121 and an air inlet plate 122, wherein two sides of the air outlet plane 121 form a plurality of connecting portions  
20           123 for fixing the air outlet plane 121 to the internal wall of the lamp base 111, so that negative ions from the negative ion generator 120 are exhausted outside the lamp body 110. Preferably, the air outlet plane 121 of the negative ion generator 120 is attached on the internal wall of the lamp base 111 for avoiding air turbulence. Therefore, the desk lamp with function of generating negative ions will increase  
25           reading efficiency of a reader at a front of the desk lamp.

          In addition, according to the present invention, the negative ion generator can be installed in another position inside the lamp body. Referring to Fig. 3, a desk lamp with a function of generating negative ions according to a second embodiment of the present invention includes a lamp body 210 and a negative ion generator 220  
30           which has a structure that is the same as the negative ion generator 120 described in the first embodiment. The lamp body 210 consists of a lamp base 211, a lamp

arm 212 and a lampshade 213. A power switch 230 is set on the lamp base 211. The lampshade 213 is a light source to define a light region. The negative ion generator 220 has an air outlet plane 221 and connecting portions 222 at perimeters of the air outlet plane 221. The negative ion generator 220 is installed on an internal wall inside the lamp arm 212 by the connecting portions 222, and the air outlet plane 221 is located toward the light region of the desk lamp to improve the atmosphere for increasing reading efficient.

Referring to Fig. 4, a desk lamp with function of generating negative ions according to a third embodiment of the present invention includes a lamp body 310 and a negative ion generator 320. Structures of a lamp base 311, a lamp arm 312, a lampshade 313 and a power switch 330 are the same as the lamp base 111, the lamp arm 112, and lamp shade 113 and the power switch 130 in the first embodiment, and thus not described in detail herein. The lamp shade 313 has a plurality of air outlet holes 314. The negative ion generator 320 is installed in an internal wall inside the lamp shade 313 and has an air outlet plane 321 corresponding to the air outlet holes 314. Two sides of the air outlet plane 321 form connecting portions 322 to connect to the lampshade 313.

Referring to Figs. 5 and 6, a desk lamp with a function of generating negative ions according to a fourth embodiment of the present invention includes a lamp body 410 and a negative ion generator 420, which has structures similar to the lamp body 110 and a negative ion generator 120 in the first embodiment. The desk lamp with function of generating negative ions further includes a fan 430 which is a D/C brushless fan or a common micro fan. The lamp body 410 consists of a lamp base 411, a lamp arm 412 and a lampshade 413. The lamp base 411 has a plurality of air outlet holes 414 and a power switch 440. A plate 415 with a plurality of air outlet holes 416 is located at a bottom of the lamp base 411. The negative ion generator 420 and the fan 430 are installed inside the lamp base 411. In this embodiment, an air outlet plane 421 of the negative ion generator 420 corresponds to the air outlet holes 414 of an internal wall of the lamp base 411 toward light region defined by the lamp shade 413. And an air inlet plane 422 of the negative ion generator 420 corresponds to a wind outlet 431 of the fan 430. The fan 430 has a plurality of

connecting portions 432 and is installed on the internal wall of the lamp base 411 through the negative ion generator 420 by a plurality of bolts 433 or other fixing elements. The negative ion generator 420 has a plurality of connection portions 423 and is installed on the internal wall of the lamp base 411 by the bolts 433 of fixing elements. When the fan 430 is operating, the negative ions from the negative ion generator 420 are exhausted outside the lamp base 411 toward the light region.

Referring to Fig. 7, a desk lamp with function of generating negative ions of a fifth embodiment of the present invention includes a lamp body 510 and a negative ion generator 520 which have structures similar to the lamp body 210 and a negative ion generator 220 in the second embodiment, wherein the negative ion generator 520 is installed in a lamp arm 512 of the lamp body 510. The desk lamp with a function of generating negative ions includes a fan 530 with a wind outlet 531 corresponding to an air inlet plane 522 of the negative ion generator 520. Preferably, the negative ion generator 520 and the fan 530 are combined together as a module installed inside the lamp arm 512. The lamp arm 512 connects the lamp base 511 with a lampshade 513, and has a plurality of air inlet holes 515 and a plurality of air outlet holes 514. The air outlet holes 14 correspond to an air outlet plane 521 of the negative ion generator 520. The negative ion generator 520 has a plurality of connecting portions 523 fixed on an internal wall of the lamp arm 512. The negative ion generator 520 can be turned on and off by a power switch 540 located on the lamp base 511. When the fan 530 is operating, the negative ions from the negative ion generator 520 are exhausted outside the lamp arm 512.

Referring to Fig. 8, a sixth embodiment is almost the same as the third embodiment of the present invention, and includes a negative ion generator 620 and a lamp body 610 which has a lamp base 611, a lamp arm 612 and a lampshade 613 that is the same as the negative ion generator 320 and the lamp body 310 in the third embodiment. But the sixth embodiment of the present invention further includes an independent fan 630. The negative ion generator 620 and the independent fan 630 are installed inside the lampshade 613 but not combined together. The lampshade has a plurality of air outlet holes 614 and a plurality of air inlet holes 615. When the fan 630 is operating, air outside the lampshade 613 will

be drawn into the lamp shade 613 by passing through the air inlet holes 615 and the negative ions from the negative ion generator 520 will be exhausted outside the lampshade 613 through the air outlet holes 614. The generated negative ions are discharged close to the reader by passing through the air outlet holes 614 for increasing reading efficiency.

The above description of embodiments of this invention is intended to be illustrated and not limiting. Other embodiments of this invention will be obvious to those skilled in the art in view of the above disclosure.